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## APPENDIX.

### TABLES RELATING TO LAKE TRANSPORTATION AND THE IRON-ORE INDUSTRY.

TABLE I.

SHIPMENTS OF IRON ORE FROM THE LAKE SUPERIOR REGION.<sup>1</sup>

Year	Long tons	Year	Long tons	Year	Long tons
Previous to 1854		1868	491,449	1883	2,341,227
1854	75,083	1869	617,444	1884	2,518,048
1855	3,000	1870	830,940	1885	2,456,548
1856	1,449	1871	779,607	1886	3,562,570
1857	36,343	1872	900,901	1887	4,738,903
1858	25,646	1873	1,162,458	1888	5,023,279
1859	15,876	1874	919,557	1889	7,390,387
1860	68,832	1875	891,257	1890	9,003,701
1861	114,401	1876	992,764	1891	7,094,981
1862	49,909	1877	1,014,687	1892	9,073,568
1863	124,169	1878	1,111,110	1893	6,065,795
1864	203,055	1879	1,375,691	1894	7,755,494
1865	243,127	1880	1,908,647	1895	10,429,037
1866	236,208	1881	2,314,502	1896	9,350,000
1867	278,796	1882	2,966,375	(Estimated)	
1867	473,567				

<sup>1</sup> The figures given in this table include the amounts shipped by all-rail routes; the quantities thus transported are, however, relatively unimportant. In 1892 the all-rail shipments were 525,768 gross tons; in 1893, 194,127; in 1894, 133,874, and in 1895, 194,127 gross tons. The all-rail shipments for 1892 were obtained from *Mineral Resources of the United States* (1892), p. 39, and the figures for the other years were taken from the *Blue Book of American Shipping* (1896), p. 206. Lake shipments of iron ore as given by Birkinbine in *The Production of Iron Ores in Various Parts of the World* (p. 195) are as follows: in 1892, 8,545,313 gross tons; in 1893, 5,836,749; and in 1894, 7,621,620 gross tons.

The first experimental shipment of iron ore from the Lake Superior region was from the Marquette range and occurred in 1850; but shipments from this range for commercial purposes did not begin until 1853. See *Mineral Resources of the United States* (1891), p. 49. The shipments previous to 1854 are given in *Mineral Resources of the United States* (1889 and 1890), p. 27; for the years 1854 to 1886, *Ibid.* (1886), p. 15; for 1887 and 1888, *Ibid.* (1888), p. 17; for 1889 to 1893, *Ibid.* (1892), p. 38; for the years 1893 to 1895, *Blue Book of American Shipping* (1896), p. 206.

Full reports of shipments to November first have been received; the estimate, therefore cannot be wide of the mark. *Marine Review*, November 12, 1896.

For freight rates by lake on iron ore from Marquette, Mich., to Lake Erie ports for the years 1856 to 1895, see *Journal of Political Economy*, June 1896, p. 415.

TABLE II.

PRODUCTION OF IRON ORE IN THE LAKE DISTRICTS OF THE SEVERAL STATES OF THE LAKE SUPERIOR REGION, IN THE LAKE REGION AS A WHOLE, IN THE UNITED STATES, AND IMPORTATIONS INTO THE UNITED STATES.

(long tons)

Year	Lake District of Michigan	Lake District of Michigan	Lake District of Wisconsin	Lake District of Minnesota	Total for the Lake Superior region	Total for the United States	Importations
Un-known	91,850						
1854	3,000						
1855	1,449						
1856	6,790						
1857	25,626	25,646			25,646		
1858	22,876	22,876			22,876		
1859	68,832	68,832			68,832		
1860	114,401	114,401			114,401	2,873,459	
1861	49,909	114,258			114,258		
1862	124,169	124,169			124,169		
1863	203,055	203,055			203,055		
1864	243,137	247,059			247,059		
1865	187,106	193,758			193,758		
1866	288,806	296,713			296,713		
1867	457,642	465,504			465,504		
1868	510,522	510,522			510,522		
1869	629,532	639,097			639,097		
1870	861,403	859,507			859,507	3,031,891	
1871	813,379	813,984			813,984		
1872	952,077	948,553			948,553		27,000
1873		1,195,234			1,195,234		62,000
1874		935,488			935,488		69,000
1875		910,840			910,840	4,500,000	83,000
1876		993,311			993,311		26,000
1877		1,025,129			1,025,129		42,000
1878		1,125,093			1,125,093		29,000
1879		1,414,182			1,414,182		284,141
1880		[1,640,814]	[ 000 ]	[ 000 ]	[1,640,000]	[7,120,362]	[493,408]
1881		1,973,455	14,143		1,987,598		782,887
1882		2,123,404	197,911		2,321,315	7,974,000	589,655
1883		2,672,287	276,020		2,948,307	9,744,000	490,875
1884		2,518,048	62,175		2,580,223		487,820
1885		2,225,148	34,612	62,122	2,321,882	8,556,330	390,786
1886		2,203,599	55,181	227,075	2,485,855	7,600,000	1,039,433
1887		3,175,959	150,294	307,948	3,634,201		1,194,301
1888		3,933,681	400,104	394,910	4,728,695		587,470
1889		4,113,803	381,140	511,953	5,006,896		853,573
1890		5,856,169	798,937	864,508	7,519,614	14,518,041	1,246,830
1891		7,141,656	549,359	891,910	8,944,031	16,036,043	912,864
1892		6,127,001	910,465	945,105	7,621,465	16,296,666	806,585
1893		7,543,544	765,379	1,255,465	9,564,388	11,587,629	526,951
1894		4,668,324	426,367	1,499,927	6,594,618	11,879,679	167,307
1895		4,419,074	305,011	2,968,463	7,692,548	15,957,614	524,153
		5,812,444	590,081	3,866,453	10,268,978		

## NOTES TO TABLE II.

Up to the census year 1880 the statistics given in the census reports covering the production of iron ore in the United States, and those of the production in the several states in particular, are very unsatisfactory. For the reports of 1850, 1860, and 1870, the statistics of production were very largely obtained from the statements made by the managers of the various blast furnaces as to the amount of ore consumed; the tables do not specify in what states the ore was produced but merely give the amounts reported as being consumed by the blast furnaces. This being the case in giving the production of the states in the early years I have used, wherever it has been possible, the statistics given in *Mineral Resources of the United States*, as they seemed the more reliable. The census figures for 1880 appear to be accurate, and as it was necessary to use them in some cases, they are given in all cases where they occur; the only objection to them is the fact that they are not for the calendar year. These figures are here enclosed in brackets. It is to be remembered that the census year 1880 ended May 1880. In other cases, unless otherwise stated, the year here referred to is the calendar year.

The figures of the column headed "Total for the United States" were obtained from the following sources: For the year 1860, *Eighth Census: Manufactures*, p. clxxvii; for 1870, *Ninth Census: Industry and Wealth*, p. 768; for 1875, *Tenth Census: Mining Industries*, p. 33; for 1880, *Eleventh Census: Mineral Industries*, p. 12; for 1881, 1882, and 1884, *Tenth Census: Mining Industries*, p. 33; for 1885, *Mineral Resources of the United States* (1885), p. 188, and for 1889 and the succeeding years, *The Production of Iron Ores in the United States* (1895), p. 10. In some cases short tons have been converted into long tons. The compilers of the Ninth Census think the production of 1870 as given is underestimated by about eight or nine hundred thousand tons (*Ninth Census: Industry and Wealth*, p. 749). For the years 1875 and 1881 the amounts given are estimates made by Mr. I. Lowthian Bell; and the amounts given for 1882, 1884, and 1885 are estimates made by Mr. James M. Swank, General Manager of the American Iron and Steel Association. The figures of importation into the United States from 1872 to 1891 were obtained from *Mineral Resources of the United States* (1891), p. 41; from 1892 to 1894, from *The Production of Iron Ores in Various Parts of the World*, p. 198; and for 1895 from *The Production of Iron Ores in the United States*, p. 25.

In giving the production of the states forming the lake region it was thought best to include only the ore mined within this region; Wisconsin's product is therefore somewhat less than that usually reported for the state. The figures of production up to 1889 were obtained from *Mineral Resources* (1889 and 1890), p. 30; and since 1889, by assigning to Wisconsin the difference between the total output of the Lake Superior region and the combined output of Michigan and Minnesota. Michigan's output as it appears in the first column is given in the *Geological Survey of Michigan* (1869-1873), vol. i. part i. Atlas Plate 12. It is not contended that these figures are exact. To some small extent the figures of the second column are of my own deduction. Up to the time when Wisconsin became a producer, I have given Michigan credit for the total yield of the Lake Superior region. In *Mineral Resources* (1883), p. 116, it is stated that the total output for the Lake region for 1856 and the previous years was 86,319 gross tons; this might also be placed in the second column. It will be noted that this

amount does not correspond with the first column. From 1880 to 1889 the difference between the total amount mined in the Lake region and the combined output of Minnesota and Wisconsin is assigned to Michigan. Since 1889 it is given as reported in *The Production of Iron Ores in the United States* (1895), p. 10.

No ore was raised in Wisconsin from the mines of the Lake region up to the close of the census year 1880; there was, however, some ore mined in this district during the calendar year 1880. For Wisconsin's output from 1880 to 1888 see *Mineral Resources* (1889 and 1890), p. 31. Since 1888 that portion of the total production of the Lake region not belonging to either Michigan or Minnesota has been assigned to Wisconsin. For Minnesota's yield of ore from 1884 to 1888 see *Mineral Resources* (1889 and 1890), p. 31; and since 1888, *The Production of Iron Ores in the United States* (1895), p. 10.

Down to 1882 the figures for the production of the Lake region as a whole were taken from *Mineral Resources* (1883), p. 116; for the years from 1883 to 1888 the figures are those of *Mineral Resources* (1891), p. 38; for the years 1888 to 1894, *Production of Iron Ores in Various Parts of the World* (1894), p. 195; and for the production of 1895, *The Production of Iron Ores in the United States* (1895), p. 12.

TABLE III.

PRODUCTION OF IRON ORE IN THE CORNWALL ORE HILLS OF PENNSYLVANIA AND THE LAKE CHAMPLAIN DISTRICT OF NEW YORK, IN NEW YORK, NEW JERSEY, PENNSYLVANIA AND OHIO, AND THE TOTAL FOR THESE STATES.

(long tons)

Year	Cornwall Ore Hills	Lake Champlain District	New York	New Jersey	Pennsylvania	Ohio	Total for these States
	11 Months						
1864	165,915			226,000			
1865	114,803						
1866	216,660						
1867	202,755			275,067			
1868	165,843						
1869	173,429						
1870	174,408		<sup>1</sup> (469,190)	(323,782)	(978,112)	(282,615)	2,053,699
1871	176,055			450,000			
1872	193,317	350,000		600,000			
1873	166,782	420,000		665,000			
1874	112,429	250,000		525,000			
1875	98,925	300,000		390,000			
1876	137,902	290,000		285,000			
1877	171,589	365,000		315,000			
1878	179,299	380,000		409,674			
1879	268,488	480,000		488,028			
1880	231,173	700,000	<sup>2</sup> [1,126,899]	[ <sup>1</sup> 676,225] 745,000	[1,951,496]	[488,753]	4,243,372
1881	249,050	637,000		737,052			
1882	309,681	725,000		932,762			
1883	363,144	540,000		521,416			
1884	412,320	530,000		393,710			
1885	508,864	420,000		330,000			
1886	688,054	588,829		500,501		344,484	
1887	667,210	768,852		547,889		377,465	
1888	722,917	669,553		447,738		253,352	
1889	769,020	779,900	1,247,537	415,510	1,560,234	254,294	3,477,575
1890	686,302	821,994	1,253,393	495,808	1,361,622	169,088	3,279,911
1891	663,746	554,865	1,017,216	525,612	1,272,928	104,487	2,920,243
1892	634,714		891,099	465,455	1,084,047	95,768	2,536,369
1893	439,705		534,122	356,150	697,985	68,141	1,656,398
1894	371,710		242,759	277,483	532,087	58,493	1,110,822
1895	614,598		307,256	282,433	900,340	44,834	1,534,863

<sup>1</sup> The figures enclosed in parentheses are those of the *Ninth Census : Industry and Wealth*, p. 768, and, as has already been explained elsewhere, they are of doubtful value.

<sup>2</sup> The figures enclosed in brackets are for the census year 1880, see *Eleventh Census : Mineral Industries*, p. 13.

## NOTES TO TABLE III.

The sources from which the output of the Cornwall Ore Hills was obtained are as follows: From 1864 to 1890 *Mineral Resources* (1889 and 1890), p. 29; for 1891, *Ibid.*, p. 41; for 1892, *Ibid.*, p. 40; for 1893, *Ibid.*, p. 43; for 1894, *Production of Iron Ores in Various Parts of the World*, p. 184; and for 1895, *Production of Iron Ores in the United States*, p. 20. For the production of iron ore in the Lake Champlain district see *Mineral Resources* (1891), p. 41. For New Jersey's output down to 1889, see *Geological Survey of New Jersey* (1893), p. 443. In *Mineral Resources* (1891), p. 41, may be found Ohio's output for the years from 1886 to 1888. The production of each of the States since 1888 is as given in *Production of Iron Ores in the United States*, p. 10.

TABLE IV.

PRODUCTION OF IRON ORE IN ALABAMA, TENNESSEE, GEORGIA, AND THE TOTAL FOR THESE STATES.

(long tons)

Year	Alabama	Tennessee	Georgia	Total
1870		30,909		30,909
1880	[171,139]	[93,272]	[81,621]	[346,032]
1881	220,000			
1882	250,000			
1883	385,000			
1884	420,000			
1885	505,000			
1886	650,000			
1887	675,000			
1888	1,000,000			
1889	1,570,319	473,294	248,020	2,291,633
1890	1,897,815	465,695	244,088	2,607,598
1891	1,986,830	543,923	250,755	2,781,508
1892	2,312,071	406,578	185,054	2,903,703
1893	1,742,410	372,996	<sup>1</sup> 186,015	<sup>1</sup> 2,301,421
1894	1,493,086	292,831	<sup>1</sup> 174,694	<sup>1</sup> 1,960,611
1895	2,199,390	519,796	<sup>1</sup> 272,014	<sup>1</sup> 2,991,200

<sup>1</sup> Including North Carolina.

#### NOTES TO TABLE IV.

All of the figures for 1870 were obtained from *Ninth Census : Industry and Wealth*, p. 768 ; they are open to the same criticism as the figures for 1870 of table II. Those of Alabama and Tennessee for 1880 were obtained from *Eleventh Census : Mineral Industries*, p. 13 ; they are therefore for the census, not for the calendar, year. For 1880 the production of Georgia is given in *Tenth Census : Mining Industries*, p. 23. Alabama's production for the years 1881 to 1888 is given in *Mineral Resources* (1891), p. 19 ; these figures are estimates based on the production of pig iron. Since 1889 the production of each of the states is that given in *The Production of Iron Ores in the United States* (1895), p. 10.